

U.S. Application No. 10/537,632 (Attorney Docket No.36211)
Inventor: Hillforth, Mikael Title: AN APPARATUS FOR DETECTING ANIMALS
Group Art Unit: 3643; Examiner: Andrea M. Valenti
Amendment Responsive to Office Action of February 4, 2008

Remarks

This amendment responds to the Office Action of February 4, 2008. Claims 1 and 4 through 20 remain in this application. Claims 2 and 3 have been cancelled. Claim 1 is the only independent claim in this application, and claims 4 through 20 depend directly or indirectly therefrom. Claims 1, 4, 6 and 17 have been amended.

The present application is concerned with an apparatus for detecting animals moving through a passage. While it is known to detect different animals which wear transponders for identification purposes, it is often difficult to detect the position of the animal, such as a cow, in order to close gates between animals to direct different animals to different locations, such as different passages or milking stalls. It has been found that animals, such as cows, tend to bunch together, even when passing along a narrow passage. So-called "cow trains" are formed when a following animal places its head upon the rear quarters of the back of a leading animal. In such circumstances, more than one animal may pass by a sensor device which is intended to count an animal or to activate a gate to segregate successive animals. In this way, a wrong count of the animals may be obtained, or a passage or pen may be jammed by the presence of more than one animal in a space intended for just one animal. The use of transponders or other animal identification tags can be useful for locating given animals, although the accuracy of such devices has been found unsatisfactory in solving the

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animal management issues in such passageways and pens in the context of the "cow-train" problem.

This problem is discussed in the specification of the present application. The examiner's attention is invited to page 1, line 27 to page 2, line 19 of the published PCT application. It is interesting to observe that elaborate video camera systems and image recognition algorithms exist for evaluating animal characteristics in great detail.

The present invention largely solves the problem of reliably counting or segregating animals which pass along a passage. From the foregoing discussion, it can be seen that the present invention is not only novel and non-obvious, but particularly advantageous, because it does not require such elaborate systems in order to solve the problem presented. As now amended, the invention is particularly directed to an apparatus for detecting the width of an animal at a predetermined position in the passage, and to produce a signal when the width of the animal is less than a predetermined value at the predetermined position. By recognizing that a width detection at a given location is enough to identify situations where an animal has passed to a given location, even when intimately engaged with another animal, the applicant has developed a system which is elegant in its simplicity and particularly effective. While the problems presented are challenging, in that animals typically move through the passage in groups, and even with one animal there are different widths of various body parts, such as the width of the head, neck, and torso, the apparatus of the present invention solves these problems by using less sophisticated equipment than that heretofore developed.

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Because the apparatus of the present invention employs a sensor and a comparator, it is easier to install, operate and maintain than more sophisticated systems of the prior art. Thus, not only does the present invention solve the problems discussed, but it does so in a particularly convenient way.

In the initial Office Action, two patents are cited to be of relevance in the initial rejection of the claims. These are U.S. Patent No. 5,673,647 to Pratt (the '647 patent), and U.S. Patent No. 4,745,472 to Hayes (the '472 patent). Applicant respectfully submits that the present amendment overcomes the prior art and places this application in condition for allowance.

The Pratt '647 patent discloses a system for keeping animals and sorting them from time to time using a succession of pens for measuring and weighing individual animals before grouping them by means of sorting gates. The grouping is performed after an overall analysis of the measurement data, which give an indication of animal past and future performance, on the basis of which animals are sorted into groups by the various sorting gates. While it is possible to use a video to measure animal dimensions, there is no specific disclosure of outputting signals on the basis of dimension or width measurements. According to Pratt '647, external dimensions of the animals are measured, and then an electronic identification tags with transponders are applied, and thereafter animals are guided in various successive pens where different measurements are made. One signal is produced for each pen, wherein individual information may be computed for each animal. After the last pen, the animals are sorted to various groups based on the individual information. The

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animals may, for instance, be ready for slaughter and then may be sorted to the group to be slaughtered. There is nothing in the Pratt '647 patent which discloses or suggests that a sensor device produces a signal when the parameter related to the width of the animal is less than a predetermined value at the determined position. This is especially true when a plurality of animals are moving in a tightly positioned group or "cow train" as discussed above.

Hayes '472 relates to the appraisal of body characteristics of individual animals using a containment means -- a so-called "chute" -- , video cameras, recording equipment and a computer data processing means. Significantly, Hayes '472 provides for the application of markers to selected reference points on the side and top of the animal to be viewed, as discussed at column 3, lines 26-29 of the reference, and at column 4, line 59 to column 5, line 5. As discussed therein, after a video sequence has been recorded, (column 5, lines 5-25) over a period of time, images of each animal are processed by processor means (column 5, line 47 to column 6, line 22). The images which are obtained and on which measurements are performed are however images which consist of grid lines (58, 60) of a front wall of the "chute" and the markers (13-16). The distance between the markers is calculated (measured) by computation, based on the relative position in the visible grid.

It is to be emphasized that Hayes '472 does not sense the animal, nor any parts of the animal, but rather the adhesive markers 13 through 16 which have been applied to the animal. The examiner can thus readily appreciate that in practical operations, where animals must be managed in a group,

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the Hayes '472 reference falls far short of a practical solution, and does not teach or suggest, or render predictable, the employment of a sensor device which senses the animal at a predetermined position. This is because the Hayes '472 reference merely senses the markers which have been manually placed on the animal. From the foregoing, it may be appreciated that there is no disclosure in Hayes of an apparatus for detecting an animal nor of a sensor device for sensing the presence of an animal in the chute (passage). Furthermore, there is no disclosure, nor would it be predictable from Hayes '472, of the sensing of the width of an animal at a determined position in the passage and of outputting the signal when the width is below a given value.

From the foregoing, applicant respectfully submits that the present invention as set forth in claim 1 is not obvious or predictable from the cited art, either alone or in combination. This holds true as well for the dependent claims 4 through 20. For example, neither of the references teaches the limitations of claim 1 as discussed above, and further that the determined direction is either vertical or horizontal, or the use of first and second sensors to sense the presence of the animal at different points in the passage, or that the sensors are spaced apart a distance larger than the width of the head of the animal but smaller than the width of the body part of the animal.

Applicant thus respectfully submits that the claims as now amended are in condition for allowance and such is courteously requested. Should the examiner have any issues which may be

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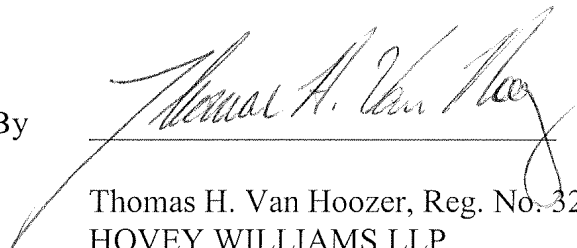
resolved by a telephone conference, they may be addressed to the undersigned at 1-800-445-3460.

Any additional fees necessitated by this submission may be charged to Deposit Account 19-0522.

Respectfully submitted,

HOVEY WILLIAMS LLP

By

A handwritten signature in dark ink, appearing to read "Thomas H. Van Hoozer", is written over a horizontal line.

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